REMARKS:

1) The claims have been amended as follows.

Claims 1, 2, 5 and 21 have been amended to more particularly recite the intended inventive subject matter, and make clear that the pertinent orienting elements are shiftable and thereby adjustable in an adjustment direction, i.e. axial direction. The features of the invention in this regard are supported in original claims 10 and 11, as well as in the specification at page 9 lines 2 to 7, page 11 lines 17 to 20, and page 14 lines 16 to 24, for example. Thus, the claim amendments do not introduce any new matter.

Certain claims have also been editorially and formally amended for clarification, as will be discussed below, in reply to the indefiniteness rejection. Such mere clarification does not introduce any new matter.

Claims 19 and 20 have been canceled.

Entry and consideration of the claim amendments are respectfully requested.

2) Referring to pages 2 to 3 of the Office Action, the objection to the drawings is respectfully traversed.

The feature of "a drive connected to at least some of said orienting elements" as recited in claim 1 is illustrated by the rotational drive with reference number 30 in Fig. 1, for example.

The "vertical motion drive" need not be illustrated, because it is merely an optional or alternative feature of claim 3. Namely, claim 3 recites that "said drive is a rotating drive

OR a vertical motion drive." Since this claim can be satisfied by either a rotating drive or a vertical motion drive, it is sufficient to show the rotating drive, which is represented by the drive with reference number 30 in Fig. 1.

Claims 19 and 20 have been canceled, so that the features of these claims (e.g. relating to the orienting passages between first and second disc rolls being adjusted smaller than orienting passages between the third and fourth disc rolls) do not need to be illustrated.

For the above reasons, it is not necessary to submit corrected Replacement Sheets of drawings, and the Examiner is respectfully requested to withdraw the drawing objection.

3) Referring to the middle of page 3 of the Office Action, the objection to claims 19 and 20 has been obviated by the cancellation of these claims.

4) Referring to pages 3 to 4 of the Office Action, the rejection of claims 1, 5, and 11 as indefinite has been taken into account in the present amendment.

The particular aspects pointed out by the Examiner relating to "the same" in claim 1, and "so as to be movable ..." in claim 11 have been clarified.

Regarding the terms "vertically" in claim 1 and "vertical" in claim 5, it is respectfully submitted that these are **NOT** relative terms. Rather, "vertical" has a specific and clearly understandable meaning, for example as defined in many dictionaries, e.g. "perpendicular to the plane of the horizon,

extending up and down, upright." Thus, the term "vertical" can be understood as applying to any given component by itself, without being relative to some other component or structure. A component is said to be "vertical" in absolute terms, not relative to some other component.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1, 5 and 11 under 35 USC § 112 (2).

5) Referring to pages 4 to 6 of the Office Action, the rejection of claims 1 to 3, 5 to 7, 9 to 12, 14, 15, 17, 18, 20 and 21 as anticipated by US Patent 4,068,991 (Ufermann et al.) is respectfully traversed.

6) Present independent claim 1 is directed to an apparatus for orienting bulk material strands.

The apparatus comprises vertically extending orienting elements that form orienting passages therebetween. An important feature of the present invention is that at least a first group of the orienting elements are shiftable and thereby adjustable relative to a second group of the orienting elements in an adjustment direction perpendicular to the conveying direction of the bulk material strands, so as to adjust respective widths of the orienting passages in the adjustment direction. This feature can be understood, for example, in the transition among Figs. 2, 3 and 4, as also indicated by the axial motion arrow 18, in the present drawings. In this regard, also see the specification

describing these drawings, for example at page 9 lines 2 to 7, page 11 lines 17 to 20, page 14 lines 16 to 24, etc.

It is significant to recognize that the inventive apparatus includes orienting elements that are actually **shiftable and adjustable** in position, i.e. are **NOT** axially fixedly arranged in the apparatus. Thus, the inventive apparatus can be adjusted "on the fly" or between successive processing runs, to provide different widths of the orienting passages as needed for different processing conditions. This does not merely involve providing successive disc rolls having respective different (fixed) spacing widths between the discs when comparing one disc roll to an adjacent disc roll in a downstream direction. Rather, for a given individual disc roll, the discs are actually shiftable and thereby adjustable to achieve different passage widths by means of different adjustments of this disc roll as needed.

7) Present independent claim 5 is also directed to an apparatus for orienting bulk material strands. The apparatus includes features similar to claim 1, and further specifies that the orienting elements are orienting discs of respective disc rolls. As explained above in connection with claim 1, claim 5 also recites that the discs of a first group are **shiftable and thereby adjustable in the axial direction** of the respective disc roll relative to a second group of the discs so as to adjust respective widths of the orienting passages formed between the respective adjacent discs. Once again, in claim 5, it is

significant that the discs of a first group are actually shiftable and thereby adjustable in the axial direction.

8) Contrary to the present invention, Ufermann et al. do **NOT** disclose an apparatus in which a first group of orienting elements or orienting discs are shiftable and thereby adjustable relative to a second group of orienting elements or discs in an adjustment direction or axial direction of disc rolls.

The apparatus of Ufermann et al. includes successive disc rolls that each have a respective fixed spacing gap size or passage width (W, W' or W'') between the discs thereof, while the successive disc rolls in a downstream conveying direction respectively have a larger spacing gap or passage width in comparison to the spacing gap or passage width of the preceding disc roll (see Fig. 3). Namely, the passage widths or inter-disc spacing gaps (W) of a given disc roll toward the left of Fig. 3 are relatively smaller, while the passage widths or inter-disc spacing gaps (W'') of a given disc roll toward the right of Fig. 3 are relatively larger. But **on a given disc roll**, the discs or orienting elements are **NOT** shiftable and are thereby **NOT** adjustable in the axial or width adjustment direction.

Note that the sectional portion of Fig. 3 shows that the discs (4, 8a) are integrally formed with the hub or shaft (8) thereof. Also note that the reference expressly says that the hubs of the discs are joined together to form a drum-like core (8) forming the shaft of the roller (col. 4 lines 45 to 48). Such a construction (in which the hubs of the discs are joined together to form a drum-like core as the shaft of the roller)

does **not** disclose or suggest that the discs shall be axially shiftable and thereby adjustable on or along the shaft.

Moreover, Ufermann et al. do **not** disclose that the shaft itself is shiftable and thereby adjustable in the axial direction. Thus, since the discs are not adjustable along the shaft, and the shaft carrying the discs is also not adjustable in the axial direction, the apparatus according to Ufermann et al. does not provide or allow for the axial shifting and adjustment of orienting elements or discs.

Instead, Ufermann et al. provide differently constructed disc rolls at successive positions (9, 10, 11, 12) so as to have different passage widths at these different positions, for spreading a fine particle size of the material strands in the first area (9) toward the left, an intermediate particle size of the material strands in the middle area (10), and a coarse particle size of the material strands in the area (11) at the right side (see Figs. 1 and 3 as well as the last four lines of the Abstract, col. 2 lines 64 to 68, col. 3 lines 18 to 23, and col. 4 lines 62 to 68).

While Ufermann et al. refer to "the adjustment of the inter-disk spacing" (col. 3 lines 8 to 9), they further explain that this refers to "the progressively increasing spacing being achieved by a reduction from roller to roller of the number of disks and/or by using disks of differing thicknesses" (underlining added, col. 3 lines 19 to 22). From this it is clear that the discs of any given roller are not shiftable and thereby adjustable in the widthwise adjustment direction or axial direction, but rather that different rollers with different

structural arrangements of discs are provided one-after-another in the downstream conveying direction.

The Examiner has referred to col. 3 lines 35 to 47 and col. 4 lines 59 to 61. These portions of the disclosure also do not disclose the presently claimed features. Col. 3 lines 40 to 44 states that "the spacing between the interdigitating disks can be adjusted to the particle size of the respective material by varying the distance between the axes of the disk rollers forming the array" (underlining added). This, once again, makes clear that the reference is not referring to the discs of any given one of the disc rollers being shiftable and thereby adjustable in the axial direction, but rather that there are to be differences of the passage width from one disc roller to the next. Furthermore, this is said to be achieved by "varying the distance between the axes of the disc rollers," which has nothing to do with shifting and thereby adjusting the discs in the axial direction on any given single one roller.

At col. 4 lines 59 to 61, the reference states that "The gap widths W, W' and W'' can be increased by reducing the thickness t of each disk, the number of disks, or the distance between them." Clearly, "reducing the thickness t of each disk" or "reducing ... the number of disks" does not involve the axial shifting and thereby adjusting of the discs of any one given disc roller. Instead, these "adjustments" actually refer to the different **construction** of successive disc rollers. Similarly, "reducing ... the distance between them" refers to different **constructions** of the successive disc rollers so as to have a different spacing distance between the discs of a given roller

in comparison to the discs of another adjacent roller. This also has nothing to do with axially shifting and thereby adjusting the discs of a single given roller. In fact, it is not understood how "reducing ... the distance between" discs will achieve an increase of the gap width. Thus, that disclosure of the reference is regarded as incorrect and non-enabling. Namely, reducing the distance between successive discs would seem to reduce the gap width. Moreover, it is clear that the reference is not talking about changing the gap width for a given roller, but merely providing different gap widths for successive rollers in the material conveying direction. See col. 4 lines 51 to 54, which expressly states that "in the direction of advance of the particulate material across the top of the array (arrow 2a) the widths W, W' and W'' progressively increase as a function of distance. That again has nothing to do with axially shifting and thereby adjusting the discs of a given roller.

The Examiner has further referred to col. 5 lines 29 to 38 as allegedly disclosing a power-driven adjustment of the first group in an axial direction. While the cited text portion does refer to motors, and to rollers being separately adjusted, the pertinent adjustment clearly has nothing to do with an axial shifting of the discs or orienting elements, but rather merely an individual adjustment of the rotation speed of the given rollers, which are rotationally driven by the respective motors (col. 5 lines 33 to 35). Adjusting the rotation speeds of the individual rollers in this manner has absolutely nothing to do with providing an axial shifting adjustment of the orienting elements or discs in the axial or width direction, and also would

not have suggested providing a power-driven adjustment in the presently claimed manner.

9) For the above reasons, the independent claims 1 and 5 are not anticipated by (and would not have been obvious over) the reference. The dependent claims recite additional features that further distinguish the invention over the prior art, for example as follows.

Claim 2 recites that the first group of orienting elements are discs mounted on a rotatable shaft to form a first disc roll, whereby the discs are axially shiftable along the shaft or the shaft is axially shiftable together with the discs mounted thereon, so as to achieve the shifting adjustment recited in claim 1. As discussed above, Ufermann et al. do not disclose (and would not have suggested) to arrange discs to be axially shiftable along a rotatable shaft, or to arrange the shaft so that it can be axially shifted together with the discs mounted thereon. Ufermann et al. have nothing to do with such an axially shiftable construction.

Contrary to present claim 10, Ufermann et al. do not disclose that a shaft of a given disc roll is axially adjustable in the axial direction relative to another one of the disc rolls.

Contrary to present claim 11, Ufermann et al. do not disclose that the discs of a given disc roll are axially movably mounted on the shaft so that these discs can be moved in the axial direction along this shaft. To the contrary, Ufermann et al. disclose a fixed rigid structure in which the hubs of the

discs are joined together to form the shaft, which would not allow any axial shifting movement of the discs along the shaft.

According to present claim 12, the range of adjustability of one group of discs extends maximally to an axial interspacing distance between successive discs of a given one of the roller shafts. This means that the discs of one roll can be adjusted to essentially contact the adjacent discs of the next adjacent roll (see Fig. 3). Ufermann et al. do not disclose any range of axial adjustment, and certainly no such range that extends so as to achieve the structure exemplified in present Fig. 3.

Contrary to present claim 14, Ufermann et al. do not disclose an adjustment drive coupled to the first group of discs to provide a power-driven adjustment of the first group of discs in the axial direction. The Examiner's reference to col. 5 lines 29 to 38 is in error, because the reference merely discloses adjusting the rotation speed of each roller, which has nothing to do with a physical axial shifting adjustment of the discs of a given roller (as discussed above).

Claim 21 depends from claim 1 and is directed to a method of using the apparatus of claim 1. This method involves a step of shifting and thereby adjusting one group of orienting elements relative to another in the adjustment direction so as to adjust the widths of the orienting passages. As discussed above, Ufermann et al. have nothing to do with such a method involving the width-wise shifting of discs or orienting elements of a given roller. Instead, Ufermann et al. merely provide successive differently constructed rollers to have different passage widths

at different locations, i.e. on different successive rollers, in the downstream conveying direction.

10) For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1 to 3, 5 to 7, 9 to 12, 14, 15, 17, 18, 20 and 21 as anticipated by Ufermann et al.

11) Referring to pages 7 and 8 of the Office Action, the rejection of claims 4, 8 and 6 (sic: 16?) as obvious over Ufermann et al. in view of US Patent 5,325,954 (Crittenden et al.) is respectfully traversed.

Claim 4 depends from claim 1, and claims 8 and 16 depend from claim 5, which have been discussed above in comparison to Ufermann et al. Crittenden et al. do not provide any additional suggestions toward the significant features of the invention discussed above.

It is significant that Crittenden et al. disclose two distinct disc arrangements, namely the Stokes arrangement as shown in Fig. 3 of the reference, and the Burkner arrangement as shown in Fig. 4 of the reference. In the Stokes arrangement, the discs on each shaft are uniformly positioned to be halfway between the discs of the adjacent shafts (col. 1 lines 29 to 31). On the other hand, in the Burkner arrangement, the discs on one shaft are arranged immediately next to the discs of the adjacent shafts (col. 1 lines 40 to 45). The Crittenden et al. reference repeatedly discloses that the discs and shafts can be arranged **either** according to the Stokes arrangement **or** according to the Burkner arrangement (col. 3 lines 40 to 44; col. 4 lines 21 to

29; col. 5 lines 61 to 66; etc.). There is no disclosure that a given single disc roll can be selectively adjusted to the Stokes arrangement and the Burkner arrangement as desired, but rather these two arrangements are disclosed as two mutually exclusive alternatives.

There is no disclosure and no suggestion toward making the discs and/or the shafts shiftable and thereby adjustable in the axial direction as according to the present invention. That is precisely the improvement that was not recognized by Crittenden et al. and that has now been made by the present invention. Namely, the apparatus according to the present invention is **not** limited to either the Stokes arrangement (Fig. 3 of the reference and Fig. 2 of the present Application) or the Burkner arrangement (Fig. 4 of the reference and Fig. 3 of the present Application), but rather can achieve a full range of axial adjustability including the Stokes arrangement (see present Fig. 2) and the Burkner arrangement (see present Fig. 3) and all positions therebetween (see Fig. 4 of the present Application), by making the orienting elements or discs shiftable and thereby adjustable in the axial direction. That would not have been suggested by any combination of the references.

For these reasons, even if the teachings of Crittenden et al. regarding present claims 4, 8, and 16 would have been viewed in combination with Ufermann et al. as discussed above, the present invention would still not have been suggested. The Examiner is respectfully requested to withdraw the rejection of claims 4, 8 and 16 as obvious over Ufermann et al. in view of Crittenden et al.

12) Referring to page 8 of the Office Action, the rejection of claims 13 and 19 as obvious over Ufermann et al. is respectfully traversed. The Examiner has admitted that Ufermann et al. do not disclose a manual adjustment of the first group of discs in the axial direction. The Examiner's proposed motivation for modifying the prior art teachings is that a person of ordinary skill in the art would have modified "*Ufermann's motor arrangement to allow for manual adjustment.*" Such a proposed motivation has no basis in the prior art, because Ufermann et al. do not disclose or suggest any sort of axial shifting adjustment of the discs, whether by a motor or by a manual system. As discussed above, the motor-driven adjustment disclosed by Ufermann et al. relates only to an individual adjustment of the rotation speeds of the individual disc rollers, Ufermann et al. do not have a motor-driven axial adjustment, so there could have been no motivation to provide a manual adjustment of this kind rather than a motor-driven adjustment. The Examiner is respectfully requested to withdraw the rejection of claim 13 as obvious over Ufermann et al. Note that claim 19 has been canceled.

13) The additional prior art made of record requires no particular comments because it has not been applied against the claims.

14) Favorable reconsideration and allowance of the application, including all present claims 1 to 18 and 21, are respectfully requested.

Respectfully submitted,

Friedrich BOSSLER
Applicant

By Walter F. Fasse
Walter F. Fasse
Patent Attorney
Reg. No.: 36132
Tel. 207-862-4671
Fax. 207-862-4681
P. O. Box 726
Hampden, ME 04444-0726

WFF:kd/4508
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Walter F. Fasse 9/6/05
Name: Walter F. Fasse - Date: September 6, 2005